

WHAT IS CLAIMED IS:

1. A dual-port broadband light source with independently controllable output powers, comprising:

a first gain medium having two ends;

5 a first input pump light for pumping the first gain medium so as to output a first amplified spontaneous emission through both ends of said first gain medium;

a second gain medium having two ends;

a second input pump light for pumping the second gain medium so as to output a second amplified spontaneous emission through both ends of said second gain medium; and

10 a reflector disposed between opposite inner ends of the first gain medium and the second gain medium for reflecting an input of the first and second amplified spontaneous emissions,

a first output terminal and a second output terminal arranged at respective outer ends of the first gain medium and the second gain medium;

15 wherein the first and second amplified spontaneous emissions output from the first and second gain mediums are output to an exterior of the light source through the first and second output terminals.

2. The source as set forth in claim 1, further comprising:

a first pump light source for outputting the first input pump light with a predetermined wavelength;

20 a first wavelength selective coupler disposed between the first gain medium and the first

output terminal for outputting the first input pump light to the first gain medium;

a second pump light source for outputting the second input pump light with a predetermined wavelength; and

a second wavelength selective coupler disposed between the second gain medium and the
5 second output terminal for outputting the second input pump light to the second gain medium.

3. The source as set forth in claim 2, further comprising:

a first optical isolator disposed between the first wavelength selective coupler and the first output terminal for allowing the first amplified spontaneous emission to pass therethrough and intercept light traveling in an opposite direction of the first spontaneous emission; and

10 a second optical isolator disposed between the second wavelength selective coupler and the second output terminal for allowing the second amplified spontaneous emission to pass therethrough and intercept the light traveling in an opposite direction of the second spontaneous emission.

4. The source as set forth in claim 1, further comprising:

15 a first pump light source for outputting the first input pump light with a predetermined wavelength;

a first wavelength selective coupler disposed between the first gain medium and the reflector for outputting the first input pump light to the first gain medium;

a second pump light source for outputting the second input pump light with a
20 predetermined wavelength; and

a second wavelength selective coupler disposed between the second gain medium and the reflector for outputting the second input pump light to the second gain medium.

5. The source as set forth in claim 1, further comprising:

a first optical isolator disposed between the first wavelength selective coupler and the first output terminal for allowing the first amplified spontaneous emission to pass therethrough and intercepting the light traveling in an opposite direction of the first spontaneous emission; and
a second optical isolator disposed between the second wavelength selective coupler and the second output terminal for allowing the second amplified spontaneous emission to pass therethrough and intercepting the light traveling in an opposite direction of the second spontaneous emission.

6. The source as set forth in claim 2, further comprising:

a first connector disposed in the first output terminal, the first connector having a first optical fiber with an inclined end; and
a second connector disposed in the second output terminal, the second connector having a second optical fiber with an inclined end.

7. The source as set forth in claim 1, further comprising:

a first pump light source for outputting the first input pump light with a predetermined wavelength;

a first wavelength selective coupler disposed between the first gain medium and the first

output terminal for outputting the first input pump light to the first gain medium;

a second pump light source for outputting the second input pump light with a predetermined wavelength;

5 a second wavelength selective coupler disposed between the first gain medium and the reflector for outputting the second input pump light to the first gain medium;

a third pump light source for outputting a third input pump light with a predetermined wavelength;

a third wavelength selective coupler disposed between the second gain medium and the reflector for outputting the third input pump light to the second gain medium;

10 a fourth pump light source for outputting a fourth input pump light with a predetermined wavelength; and

a fourth wavelength selective coupler disposed between the second gain medium and the second output terminal for outputting the fourth input pump light to the second gain medium.

8. The source as set forth in claim 1, further comprising:

15 a first optical isolator disposed between the first wavelength selective coupler and the first output terminal for allowing the first amplified spontaneous emission to pass therethrough and intercepting the light traveling in an opposite direction to the first amplified spontaneous emission; and

20 a second optical isolator disposed between the fourth wavelength selective coupler and the second output terminal for allowing the second amplified spontaneous emission to pass therethrough and intercepting the light traveling in an opposite direction to the first amplified

spontaneous emission.

9. The source as set forth in claim 1, wherein the first gain medium and the second gain medium are comprised of one of an erbium doped fiber and an erbium doped planar light wave circuit.

10. The source as set forth in claim 1, wherein the first gain medium and the second gain medium are comprised of one of a thulium doped fiber and a thulium doped planar light wave circuit.

11. The source as set forth in claim 1, wherein the first gain medium and the second gain medium are comprised of one of a praseodymium doped fiber and a praseodymium doped planar light wave circuit.

12. A method of providing a dual-port broadband light source with independently controllable output, comprising the steps of:

(a) providing a first gain medium having two ends;
(b) arranging a first input pump light for pumping the first gain medium so as to output a first amplified spontaneous emission through both ends of said first gain medium;

(c) providing a second gain medium having two ends;
(d) arranging a second input pump light for pumping the second gain medium so as to output a second amplified spontaneous emission through both ends of said second gain medium;

and

(e) disposing a reflector between opposite inner ends of the first gain medium and the second gain medium for reflecting an input of the first and second amplified spontaneous emissions;

5 (f) arranging a first output terminal and a second output terminal arranged at respective outer ends of the first gain medium and the second gain medium; and

(g) outputting one of the first and second amplified spontaneous emissions from the first and second gain mediums to an exterior of the light source through the first and second output terminals.

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13. The method according to claim 12, wherein the first gain medium and the second gain medium are comprised of one of an erbium doped fiber and an erbium doped planar light wave circuit.

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14. The method according to claim 12, wherein the first gain medium and the second gain medium are comprised of one of a thulium doped fiber and a thulium doped planar light wave circuit.

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15. The method according to claim 12, wherein the first gain medium and the second gain medium are comprised of one of a praseodymium doped fiber and a praseodymium doped planar light wave circuit.

16. The method according to claim 12, further comprising:

providing a first pump light source for outputting the first input pump light with a predetermined wavelength;

arranging a first wavelength selective coupler disposed between the first gain medium

5 and the first output terminal for outputting the first input pump light to the first gain medium;

providing a second pump light source for outputting the second input pump light with a predetermined wavelength; and

arranging a second wavelength selective coupler disposed between the second gain medium and the second output terminal for outputting the second input pump light to the second

10 gain medium.